DERWENT-ACC-NO: 1993-148817

DERWENT-WEEK: 199318

TITLE: Automating feed and sticking of belt-like material - using optical displacement sensor near moulding drum to correct feed of material in cooperation with tip side straightening guide device

PATENT-ASSIGNEE: YOKOHAMA RUBBER CO LTD[YOKO]

PRIORITY-DATA: 1991JP-0247589 (September 26, 1991)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
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APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP 05084849A	N/A	1991JP-0247589	September 26, 1991

INT-CL (IPC): B29C065/78, B29D030/30 , B29K105:52

ABSTRACTED-PUB-NO: JP 05084849A

BASIC-ABSTRACT:

A straightening guide device for the tip side of a tyre belt-like material, sensors for detecting the cut length of a material to previously cut the tyre constituting material to length responding to the peripheral length of a moulding drum, and a rear end side straightening guide device are arranged in the middle of a feed conveyor. An optical displacement sensor, such as laser, is located near a tyre moulding drum in a manner to regulate its position. The displacement sensor corrects a position of a subsequent feeding tyre belt-like material in cooperation with the tip side straightening guide device and the rear end side straightening guide device based on data on the measured two-end joining state of the tyre belt-like material, and corrects and controls the target winding length of the tyre constituting material based on data on the joint state of a central part of the tyre belt-like material.

USE/ADVANTAGE - A stable high-precise joining state is produced without repeating delicate regulation. Joint precision of a belt-like material can be stabilised without being influenced by equipment precision.

CHOSEN-DRAWING: Dwg.0/10

TITLE-TERMS: AUTOMATIC FEED STICK BELT MATERIAL OPTICAL DISPLACEMENT SENSE MOULD DRUM CORRECT FEED MATERIAL COOPERATE TIP SIDE STRAIGHTENING GUIDE DEVICE

DERWENT-CLASS: A35 A95

CPI-CODES: A09-D03; A11-A; A11-C01A; A12-T01A;

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:
Key Serials: 0009 0223 0229 2343 2353 2470 2545 2826
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SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C1993-066098

PAT-NO: JP405084849A

DOCUMENT-IDENTIFIER: **JP 05084849 A**

TITLE: METHOD FOR AUTOMATICALLY SUPPLYING AND BONDING STRIP LIKE MATERIAL

PUBN-DATE: April 6, 1993

INVENTOR-INFORMATION:
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ASSIGNEE-INFORMATION:

NAME	COUNTRY
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APPL-NO: JP03247589

APPL-DATE: September 26, 1991

INT-CL (IPC): B29D030/30, B29C065/78

ABSTRACT:

PURPOSE: To obtain the title method capable of stabilizing the accuracy of the bonding part of a tire strip like material containing steel cords.

CONSTITUTION: A correcting guide device 4 for the leading end part of a tire strip like material W, material cutting length detecting sensors 5a, 5b preliminarily cutting the tire strip like material W into the length corresponding to the peripheral length of a tire molding drum 1 and a correcting guide device 6 for the rear end part of the tire strip like material W are arranged on the way of a supply conveyor 2 and an optical displacement sensor 7 such as a laser is arranged in the vicinity of the tire molding drum 1 in a positionally adjustable manner. The displacement sensor 7 corrects the positions of the leading and rear end parts of the tire strip like material supplied next on the basis of the measured data of the states of the bonding parts at both ends of the tire strip like material by the correcting guide devices 4,6 and also corrects and controls the objective winding length of the tire strip like material W on the basis of the data of the state of the bonding part at the central part of the tire strip like material W.

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特開平5－84849

(43)公開日　平成５年(1993)４月６日

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Ｂ２９Ｄ　30/30		8824－4Ｆ		
Ｂ２９Ｃ　65/78		2126－4Ｆ		
// Ｂ２９Ｋ 105:22				

審査請求　未請求　請求項の数１(全　５　頁)

(21)出願番号　特願平3－247589

(22)出願日　平成３年(1991)９月26日

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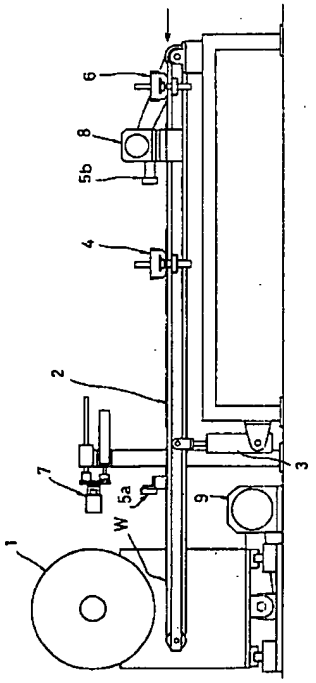
(54)【発明の名称】　帯状材料の自動供給貼付け方法

(57)【要約】　（修正有）
【目的】　スチールコード入りタイヤ帯状材料の接合部精度を安定させることが出来る自動供給貼付け方法。
【構成】　供給コンベヤー２の途中には、タイヤ帯状材料Ｗの先端側矯正ガイド装置４と、予めタイヤ成形ドラム１の周長に対応した長さにタイヤ構成材料Ｗを切断する材料切断長検出用センサー５ａ，５ｂと、後端側矯正ガイド装置６とが設置され、またタイヤ成形ドラム１の近傍には、レーザー等の光学的な変位センサー７が位置調整可能に設置されている。変位センサー７は、測定したタイヤ帯状材料Ｗの両端接合部状態のデータに基づき、次に供給されるタイヤ帯状材料Ｗを先端側矯正ガイド装置４及び後端側矯正ガイド装置６により位置補正すると共に、タイヤ帯状材料Ｗの中央部Ｘの接合部状態のデータに基づき、タイヤ構成材料Ｗの巻付け目標長さを補正制御する。



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【特許請求の範囲】

【請求項1】　予めタイヤ成形ドラムの周長に対応して切断された帯状材料をタイヤ成形ドラムの表面に巻付け、この巻付けられた帯状材料の先端が長手方向に対して一定角度で切断された接合部の幅方向の両端近傍及び幅方向の中央部の接合状態を、タイヤ成形ドラムの表面に対して一定の距離に位置決め可能に設置された変位センサーにより測定し、この測定値が前記接合部の接合状態の目標値と異なる場合、前記変位センサーにより測定した接合部幅方向の両端近傍のデータに基づき、次に供給される帯状材料の先端部及び後端部における接合部幅方向の両端近傍の補正を行う矯正ガイド装置の位置補正を行うと共に、前記変位センサーにより測定した接合部中央部のデータに基づき、帯状材料のタイヤ成形ドラムの表面に巻付ける際の巻付け目標長さを補正制御することを特徴とする帯状材料の自動供給貼付け方法。

【発明の詳細な説明】

【0001】

【産業上の利用分野】この発明は、帯状材料の自動供給貼付け方法に係わり、更に詳しくはタイヤ成形ドラムの表面に巻付けられる一定長さに切断されたスチールコード入りの帯状材料の接合部の状態が、実際にタイヤ成形ドラムの表面に巻付けられた接合状態と異なる場合、次に巻付ける帯状材料の巻付け条件を補正制御することにより、常に精度の高い巻付けを自動的に行うことが出来る帯状材料の自動供給貼付け方法に関するものである。

【0002】

【従来の技術】近年、タイヤ成形工程の自動化を促進する上で、タイヤの成形精度を上げることや、その精度を安定して確保することが極めて重要な点となる。

【0003】

【発明が解決しようとする問題点】ところで、上記のような成形精度の中でも、スチールコード入り帯状材料の接合部精度は、タイヤの品質に与える影響が大きいことから特に重要となるが、タイヤ構成材料の端末部の精度や、設備精度の影響を受け易いく、従って接合部精度を安定させることが難しいと言う問題があった。

【0004】この発明は、かかる従来の課題に着目して案出されたもので、帯状材料の接合状態を変位センサーにより測定して、この測定データに基づき次回に供給される帯状材料の接合状態を補正制御することで、微妙な調整を繰返し行うことなく安定した高精度の接合状態を得ることが出来、また帯状材料の端末部精度や、設備精度の影響を受けることなく、帯状材料の接合部精度を安定させることが出来る帯状材料の自動供給貼付け方法を提供することを目的とするものである。

【0005】

【課題を解決するための手段】この発明は上記目的を達成するため、予めタイヤ成形ドラムの周長に対応して切断された帯状材料をタイヤ成形ドラムの表面に巻付け、

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この巻付けられた帯状材料の先端が長手方向に対して一定角度で切断された接合部の幅方向の両端近傍及び幅方向の中央部の接合状態を、タイヤ成形ドラムの表面に対して一定の距離に位置決め可能に設置された変位センサーにより測定し、この測定値が前記接合部の接合状態の目標値と異なる場合、前記変位センサーにより測定した接合部幅方向の両端近傍のデータに基づき、次に供給される帯状材料の先端部及び後端部における接合部幅方向の両端近傍の補正を行う矯正ガイド装置の位置補正を行うと共に、前記変位センサーにより測定した接合部中央部のデータに基づき、帯状材料のタイヤ成形ドラムの表面に巻付ける際の巻付け目標長さを補正制御することを要旨とするものである。

【0006】

【発明の作用】この発明は、上記のように構成され、予めタイヤ成形ドラムの周長に対応して切断された帯状材料をタイヤ成形ドラムの表面に巻付けた状態で、その接合状態を変位センサーにより測定し、この変位センサーにより測定したデータに基づき、次回から供給される帯状材料の先端部及び後端部における接合部幅方向の両端近傍の補正と、接合部中央部の補正とを自動的に行うことにより、常に安定した高精度の接合状態を得ることが出来るものである。

【0007】

【発明の実施例】以下、添付図面に基づき、この発明の実施例を説明する。図1は、この発明を実施したタイヤ帯状材料の接合部精度測定装置の概略正面図を示し、1はタイヤ成形ドラム、2はタイヤ成形ドラム1にスチールベルト等のタイヤ帯状材料Wを供給して貼付ける昇降可能な供給コンベヤーを示し、この供給コンベヤー2の先端側は、昇降シリンダー3を介してタイヤ成形ドラム1の下面側に圧着可能になっている。

【0008】また、前記供給コンベヤー2の途中には、タイヤ帯状材料Wの先端側矯正ガイド装置4と、予めタイヤ成形ドラム1の周長に対応した長さにタイヤ構成材料Wを切断する材料切断長検出用センサー5a，5bと、後端側矯正ガイド装置6とが設置され、またタイヤ成形ドラム1の近傍には、レーザー等の光学的な変位センサー7が位置調整可能に設置されている。また、8は供給コンベヤー2の送り量を検出するエンコーダを備えた駆動モータを示している。

【0009】前記変位センサー7は、図2に示すように、タイヤ成形ドラム1の表面に貼付けられたタイヤ帯状材料Wの接合部Waの両端近傍Zと、中央部Xとを、前記タイヤ成形ドラム1を一定の速度で回転させながら、例えばタイヤ成形ドラム1の周方向に0.1 ㎜毎に測定するものである。そして、測定したタイヤ帯状材料Wの両端接合部状態のデータに基づき、次に供給されるタイヤ帯状材料Wの先端部Wxとタイヤ帯状材料Wの後端部Wzとを先端側矯正ガイド装置4及び後端側矯正ガイ

ド装置6により位置補正すると共に、タイヤ帯状材料Wの中央部Xの接合部状態、即ちタイヤ帯状材料Wの先端部Wxと後端部Wzとの重なり量，口開き量のデータに基づき、タイヤ構成材料Wの巻付け目標長さを補正制御するものである。

【0010】一般に、タイヤ帯状材料Wの端末部の接合状態の代表例としては、図3に示すようにタイヤ帯状材料Wの先端部Wxと後端部Wzとが開いているオープンスプライス状態（口開き状態）、図4に示すようにタイヤ帯状材料Wの先端部Wxと後端部Wzとが重なっているラップスプライス状態、図5に示すようにタイヤ帯状材料Wの端末部において右側がラップし、左側がオープンしている状態、図6に示すようにタイヤ帯状材料Wの端末部において右側がオープンし、左側がラップしている状態等が知られている。

【0011】上記のようなタイヤ帯状材料Wの端末部の接合状況において、例えば、図3に示すようにタイヤ帯状材料Wの先端部Wxと後端部Wzとが均一の幅で開いているオープンスプライス状態や、図4に示すようにタイヤ帯状材料Wの先端部Wxと後端部Wzとが均一の幅で重なっているラップスプライス状態を変位センサー7により測定した場合、即ち、上記のように変位センサー7により、タイヤ帯状材料Wの中央部Xの接合状態を検出し、この検出した値に基づき重なり量，口開き量を算出した時には、このデータに基づき、次回に供給するタイヤ帯状材料Wに対して、タイヤ成形ドラム1の回転速度と、供給コンベヤー2の送り量を、タイヤ成形ドラム1の駆動モータ9及びエンコーダを備えた駆動モータ8によりぞれぞれ制御して図10に示すようにタイヤ帯状材料Wの端末部が一致するように制御するものである。

【0012】また、タイヤ帯状材料Wの端末部の接合状況において、例えば、図5に示すようにタイヤ帯状材料Wの端末部において右側がラップし、左側がオープンしている状態や、図6に示すようにタイヤ帯状材料Wの端末部において右側がオープンし、左側がラップしている状態を変位センサー7により測定した場合、即ち、上記のように変位センサー7により、タイヤ帯状材料Wの接合部Waの両端近傍Zの接合部状態を検出した場合、次回に供給するタイヤ帯状材料Wに対して、タイヤ帯状材料Wの先端部Wxとタイヤ帯状材料Wの後端部Wzとを先端側矯正ガイド装置4及び後端側矯正ガイド装置6により位置補正するのである。

【0013】次に、先端側矯正ガイド装置4及び後端側矯正ガイド装置6の構成を、図7～図9に基づいて説明する。なお、先端側矯正ガイド装置4及び後端側矯正ガイド装置6は、同一の構成及び作用なので、先端側矯正ガイド装置4についてのみ説明する。まず、供給コンベヤー2の途中の幅方向の両端近傍に、供給コンベヤー3の搬送面3aに対して昇降シリンダー11a，11bが垂直に吊設されている。前記昇降シリンダー11a，11bのロッド12a，12bの先端に、前記搬送面3aと水平に架設された支持フレーム13に、前記定尺切断されたタイヤ帯状材料Wの先端部Wxまたは後端部Wzを乗り上げさせて矯正するエレベートバー14が取付けられている。

【0014】また、前記支持フレーム13の上部には、供給コンベヤー3の幅方向に、二本のガイドロッド15a，15bと、その間にネジ軸16が平行に配設され、前記ガイドロッド15a，15bには、ガイド位置調整部材17及び退避シリンダー18を介して供給コンベヤー3の幅方向に水平移動可能な支持部材19が取付けられ、この支持部材19には、タイヤ帯状材料Wの側縁部Wyに当接可能なガイドプレート20が設けられている。

【0015】また前記ネジ軸16には、ガイド位置調整部材17が螺嵌され、また支持部材19には、昇降シリンダー21を介して複数個のガイドローラを配設した幅寄せ部材22が設けられている。前記ネジ軸16は、支持フレーム13上に設置された駆動モータ23及び駆動伝達手段24（プーリ及びベルトにより構成したもの）を介して接続され、駆動モータ23の正転または逆転によりネジ軸16が正逆回転することにより、ガイド位置調整部材17を供給コンベヤー3の幅方向に往復移動するように構成されている。

【0016】次に、タイヤ帯状材料Wの先端部及び後端部の形状の矯正方法について説明する。まず、供給コンベヤー3の搬送面3a上に昇降シリンダー11a，11bによりエレベートバー14を下降させた状態から、供給コンベヤー3を正転させてタイヤ帯状材料Wの先端部Wxまたは後端部Wzを図7に示すように乗り上げさせる。次に、定尺切断されたタイヤ帯状材料Wの先端部Wxまたは後端部Wzがエレベートバー14に乗り上げた後，退避シリンダー18により支持部材19を移動させ、供給コンベヤー3の側部待機位置からガイドプレート20をタイヤ帯状材料Wの側縁部Wyに当接させる。

【0017】その後、タイヤ帯状材料Wの先端部Wxまたは後端部Wzの内側に位置する幅寄せ部材22を昇降シリンダー21を介して下降させてタイヤ帯状材料Wの先端部Wxまたは後端部Wzの内側に圧着させ、この状態で前記供給コンベヤー3を低速で逆転作動させることにより、ガイドプレート20の側面と幅寄せ部材22とでタイヤ帯状材料Wの先端部Wxまたは後端部Wzの形状を矯正することが出来るのである。

【0018】以上のような定尺切断されたタイヤ帯状材料Wの先端部Wxまたは後端部Wzの矯正が終了した段階で再びエレベートバー14を上昇させた後、供給コンベヤー3を正転させてスチールベルトを前方（図7の矢印方向）へ送り、タイヤ成形ドラム1と同期させた状態でタイヤ帯状材料Wをタイヤ成形ドラム1上に供給し、タイヤ帯状材料Wの端末部をスプライスすることで、図

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10に示すような常に精度の高いスプライスを行うことが出来るのである。

【0019】以上のように、先にタイヤ成形ドラム1に巻付けたタイヤ構成材料Wの端末部の接合状態を変位センサー7により測定し、この測定データに基づき、次回から供給されるタイヤ構成材料Wの接合部の補正制御を行うことにより、常に安定した高精度の接合状態を得ることが出来るものである。

【0020】

【発明の効果】この発明は、上記のように予めタイヤ成形ドラムの周長に対応して切断された帯状材料をタイヤ成形ドラムの表面に巻付け、この巻付けられた帯状材料の先端が長手方向に対して一定角度で切断された接合部の幅方向の両端近傍及び幅方向の中央部の接合状態を、タイヤ成形ドラムの表面に対して一定の距離に位置決め可能に設置された変位センサーにより測定し、この測定値が前記接合部の接合状態の目標値と異なる場合、前記変位センサーにより測定した接合部幅方向の両端近傍のデータに基づき、次に供給される帯状材料の先端部及び後端部における接合部幅方向の両端近傍の補正を行う矯正ガイド装置の位置補正を行うと共に、前記変位センサーにより測定した接合部中央部のデータに基づき、帯状材料のタイヤ成形ドラムの表面に巻付ける際の巻付け目標長さを補正制御するので、微妙な調整を繰返し行うことなく安定した高精度の接合状態を得ることが出来、また帯状材料の端末部精度や、設備精度の影響を受けることなく、帯状材料の接合部精度を安定させることが出来る効果がある。

【図面の簡単な説明】

【図1】この発明を実施したタイヤ構成材料の接合部精度測定装置の概略正面図である。

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【図2】タイヤ成形ドラムにタイヤ構成部材を貼付けた状態を示す説明図である。

【図3】タイヤ構成材料の端末部の接合状況における先端部と後端部とが均一の幅で開いているオープンスプライス状態を示す説明図である。

【図4】タイヤ構成材料の端末部の接合状況における先端部と後端部とが均一の幅で重なっているラップスプライス状態を示す説明図である。

【図5】タイヤ構成材料の端末部の接合状況における右側がラップし、左側がオープンしている状態を示す説明図である。

【図6】タイヤ構成材料の端末部の接合状況における右側がオープンし、左側がラップしている状態を示す説明図である。

【図7】タイヤ構成材料の先端側矯正ガイド装置の平面図である。

【図8】タイヤ構成材料の先端側矯正ガイド装置の正面図である。

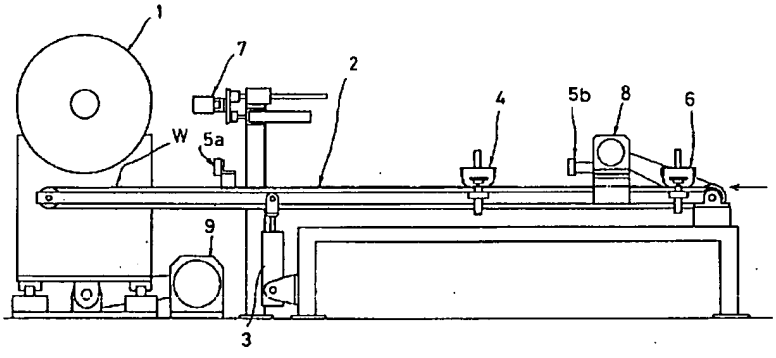
【図9】タイヤ構成材料の先端側矯正ガイド装置の側面図である。

【図10】タイヤ構成材料の端末部の接合状況におけるバットスプライス状態を示す説明図である。

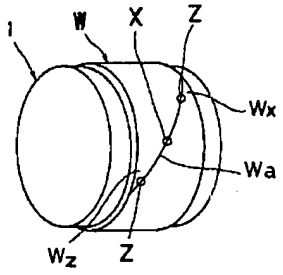
【符号の説明】

1　タイヤ成形ドラム、　2　タイヤ帯状材料
4　先端側矯正ガイド装置　6　後端側矯正ガイド装置
7　変位センサー　W　タイヤ帯状材料
Wx　タイヤ帯状材料の先端部　Wz　タイヤ帯状材料の後端部
Wa　タイヤ帯状材料の接合部

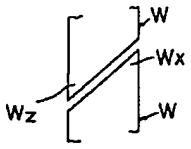
【図1】



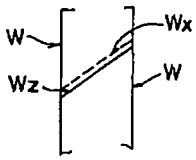
【図2】



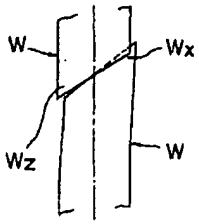
【図3】



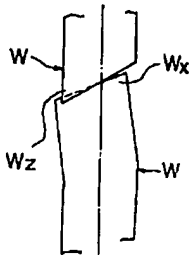
【図4】



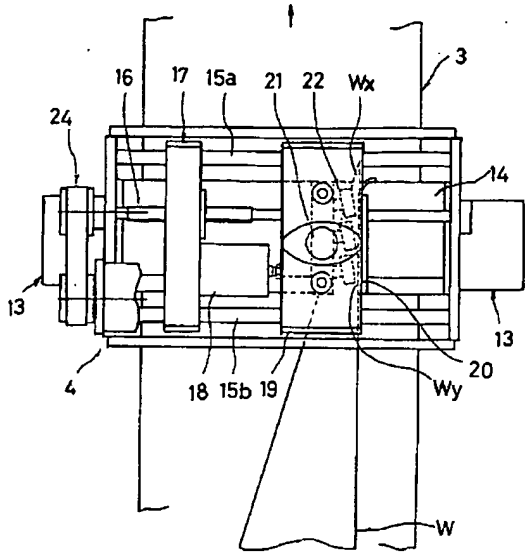
【図5】



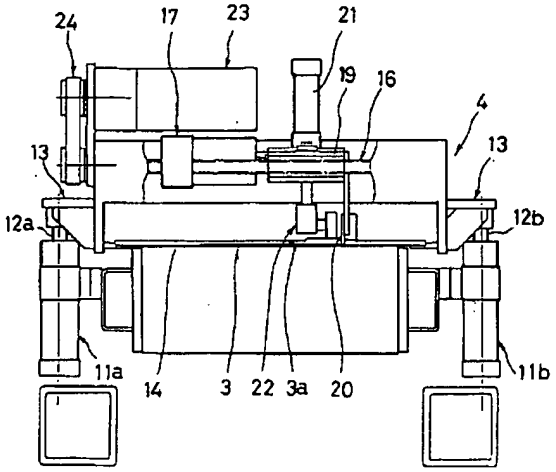
【図6】



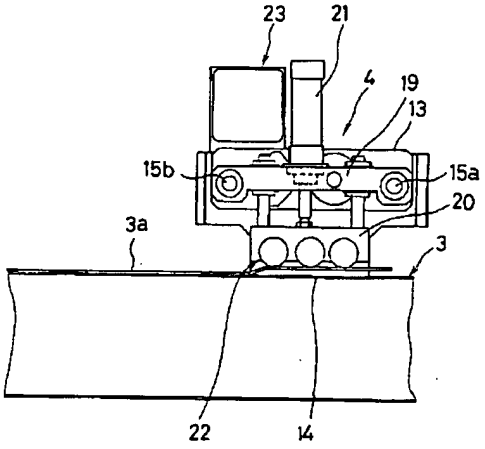
【図7】



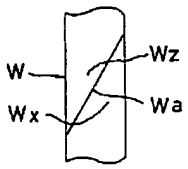
【図8】



【図9】



【図10】



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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] With respect to the automatic supply attachment approach of a band-like ingredient, the condition of the joint of the band-like ingredient of entering [which was cut by the fixed die length twisted around the front face of a tire shaping drum] a steel code in more detail this invention When it differs from the junction condition actually twisted around the front face of a tire shaping drum, it is related with the automatic supply attachment approach of a band-like ingredient that volume attachment with an always high precision can be performed automatically, by the band-like ingredient twisted around a degree twisting, and carrying out amendment control of the conditions.
[0002]
[Description of the Prior Art] When promoting automation of a tire forming cycle in recent years, it becomes a very important point to raise the shaping precision of a tire or for it to be stabilized and to secure the precision.
[0003]
[Problem(s) to be Solved by the Invention] By the way, although the joint precision of the band-like ingredient containing a steel code became important from the effect which it has on the quality of a tire being large especially also in the above shaping precision, there was a problem said that it is difficult to stabilize the precision of the terminal section of a tire component, and ** which is easy to be influenced of facility precision, therefore joint precision.
[0004] It is carrying out amendment control of the junction condition of the band-like ingredient which this invention was thought out paying attention to this conventional technical problem, measures the junction condition of a band-like ingredient by the displacement sensor, and is supplied next time based on this measurement data. The junction condition of the high degree of accuracy stabilized without having repeated delicate adjustment and performing it can be acquired. Moreover, it aims at offering the automatic supply attachment approach of the band-like ingredient which can stabilize the joint precision of a band-like ingredient, without being influenced of the terminal section precision of a band-like ingredient, and facility precision.
[0005]
[Means for Solving the Problem] In order that this invention may attain the above-mentioned object, the band-like ingredient beforehand cut corresponding to the circumference of a tire shaping drum is twisted around the front face of a tire shaping drum. The junction condition of the crosswise center section near the ends of the cross direction of a joint where the head of this twisted band-like ingredient was cut at the fixed include angle to the longitudinal direction It measures by the displacement sensor installed in a fixed distance possible [positioning] to the front face of a tire shaping drum. When this measured value differs from the desired value of the junction condition of said joint, it is based on the data near the ends of the joint cross direction measured by said displacement sensor. Next, while performing location amendment of the correction guide equipment which amends near the ends of the joint cross direction in the point and the back end section of a band-like ingredient which are supplied Let it be a summary to

twist at the time of twisting around the front face of the tire shaping drum of a band-like ingredient based on the data of the joint center section measured by said displacement sensor, and to carry out amendment control of the target die length.
[0006]
[Function of the Invention] It is in the condition which twisted around the front face of a tire shaping drum the band-like ingredient which this invention was constituted as mentioned above and was beforehand cut corresponding to the circumference of a tire shaping drum. Amendment near the ends of the joint cross direction in the point and the back end section of a band-like ingredient which are supplied from next time based on the data which measured that junction condition by the displacement sensor, and were measured by this displacement sensor, By performing amendment of a joint center section automatically, the junction condition of the always stabilized high degree of accuracy can be acquired.
[0007]
[Example] Hereafter, the example of this invention is explained based on an accompanying drawing. Drawing 1 shows the outline front view of the joint precision measuring device of the tire band-like ingredient which carried out this invention, supply contest ** YA which 1 supplies a tire shaping drum to the tire shaping drum 1, and 2 supplies the tire band-like ingredients W, such as a steel band belt, and is stuck and which can be gone up and down is shown, and sticking by pressure of the head side of this supply contest ** YA 2 is attained through the rise-and-fall cylinder 3 at the underside side of the tire shaping drum 1.
[0008] Moreover, the head side correction guide equipment 4 of the tire band-like ingredient W, the sensors 5a and 5b for cropping length detection which cut the tire component W to the die length corresponding to the circumference of the tire shaping drum 1 beforehand, and back end side correction guide equipment 6 are installed in the middle of said supply contest ** YA 2, and the optical displacement sensors 7, such as laser, are installed in it possible [justification] near the tire shaping drum 1. Moreover, 8 shows the drive motor equipped with the encoder which detects the feed per revolution of supply contest ** YA 2.
[0009] Said displacement sensor 7 measures the center section X near [Z] the ends of Joint Wa of the tire band-like ingredient W stuck on the front face of the tire shaping drum 1 every 0.1 mm, for example to the hoop direction of the tire shaping drum 1, rotating said tire shaping drum 1 at a fixed rate, as shown in drawing 2 . And it is based on the data of the ends joint condition of the measured tire band-like ingredient W. Next, while carrying out location amendment of the point Wx of the tire band-like ingredient W and the back end section Wz of the tire band-like ingredient W which are supplied with head side correction guide equipment 4 and back end side correction guide equipment 6 Based on the data of the joint condition of laps of the center section X of the tire band-like ingredient W, i.e., the amount of the point Wx of the tire band-like ingredient W, and the back end section Wz, and the amount of opening apertures, the tire component W twists and amendment control of the target die length is carried out.
[0010] Generally as an example of representation of the junction condition of the terminal section of the tire band-like ingredient W The opening splice condition which Point Wx and the back end section Wz of the tire band-like ingredient W are opening as shown in drawing 3 (opening aperture condition), The lap splice condition that Point Wx and the back end section Wz of the tire band-like ingredient W have lapped as shown in drawing 4 , As shown in drawing 5 , in the terminal section of the tire band-like ingredient W, right-hand side carries out a lap, as shown in the condition and drawing 6 which left-hand side opens, right-hand side opens in the terminal section of the tire band-like ingredient W, and the condition that left-hand side is carrying out the lap etc. is known.
[0011] In the junction situation of the terminal section of the above tire band-like ingredients W For example, the opening splice condition which Point Wx and the back end section Wz of the tire band-like ingredient W are opening by the width of face of homogeneity as shown in drawing 3 , As shown in drawing 4 , when Point Wx and the back end section Wz of the tire band-like ingredient W measure the lap splice condition of having lapped by the width of face of homogeneity, by the displacement sensor 7,

as mentioned above by the displacement sensor 7 When the junction condition of the center section X of the tire band-like ingredient W is detected and the amount of laps and the amount of opening apertures are computed based on this detected value As opposed to the tire band-like ingredient W supplied next time based on this data The rotational speed of the tire shaping drum 1, It controls so that the terminal section of the tire band-like ingredient W is in agreement, as ******** control is carried out with the drive motor 8 equipped with the drive motor 9 and encoder of the tire shaping drum 1 and the feed per revolution of supply contest ** YA 2 is shown in drawing 10 .

[0012] Moreover, in the junction situation of the terminal section of the tire band-like ingredient W, as shown in drawing 5 , in the terminal section of the tire band-like ingredient W, right-hand side carries out a lap. When the condition that left-hand side opens, and the condition that right-hand side opens in the terminal section of the tire band-like ingredient W as shown in drawing 6 , and left-hand side is carrying out the lap are measured by the displacement sensor 7, as mentioned above by the displacement sensor 7 As opposed to the tire band-like ingredient W supplied next time when the joint condition near [Z] the ends of the joint Wa of the tire band-like ingredient W is detected Location amendment of the point Wx of the tire band-like ingredient W and the back end section Wz of the tire band-like ingredient W is carried out with head side correction guide equipment 4 and back end side correction guide equipment 6.

[0013] Next, the configuration of head side correction guide equipment 4 and back end side correction guide equipment 6 is explained based on drawing 7 - drawing 9 . In addition, since head side correction guide equipment 4 and back end side correction guide equipment 6 are the same configuration and an operation, they explain only head side correction guide equipment 4. First, the rise-and-fall cylinders 11a and 11b are vertically hung to conveyance side 3a of supply contest ** YA 3 near the ends of the cross direction in the middle of supply contest ** YA 2. The elevate bar 14 which said Point Wx or back end section Wz of the tire band-like ingredient W by which standard size cutting was carried out is made to run aground on the support frame 13 constructed at the head of the rods 12a and 12b of said rise-and-fall cylinders 11a and 11b at a level with said conveyance side 3a, and corrects it on it is attached.

[0014] In the upper part of said support frame 13, crosswise [of supply contest ** YA 3] Moreover, two guide rods 15a and 15b, The screw shaft 16 is arranged in parallel between them. To said guide rods 15a and 15b The guide plate 20 to which the supporter material 19 in which horizontal migration is possible can contact a mounting eclipse and this supporter material 19 at the side edge section Wy of the tire band-like ingredient W is formed crosswise [of supply contest ** YA 3] through the guide positioning member 17 and the evacuation cylinder 18.

[0015] Moreover, the ****** member 22 which the guide positioning member 17 was screwed and arranged two or more guide idlers in the supporter material 19 through the rise-and-fall cylinder 21 is formed in said screw shaft 16. It connects through the drive motor 23 installed on the support frame 13, and an actuation means of communication 24 (what was constituted with the pulley and the belt), and when the screw shaft 16 carries out forward counterrotation by normal rotation or an inversion of a drive motor 23, said screw shaft 16 is constituted so that both-way migration of the guide positioning member 17 may be carried out crosswise [of supply contest ** YA 3].

[0016] Next, the correction approach of the configuration of the point of the tire band-like ingredient W and the back end section is explained. First, Point Wx or the back end section Wz of the tire band-like ingredient W is made to run aground, as supply contest ** YA 3 is rotated normally and it is shown in drawing 7 from the condition of having dropped the elevate bar 14 in the rise-and-fall cylinders 11a and 11b on conveyance side 3a of supply contest ** YA 3. Next, after Point Wx or the back end section Wz of the tire band-like ingredient W by which standard size cutting was carried out runs aground to an elevate bar 14, the supporter material 19 is moved in the evacuation cylinder 18, and a guide plate 20 is made to contact the side edge section Wy of the tire band-like ingredient W from the flank position in readiness of supply contest ** YA 3.

[0017] Then, you drop the ****** member 22 located inside the point Wx of the tire band-like ingredient W, or the back end section Wz through the rise-and-fall cylinder 21, and make it stuck by pressure inside the point Wx of the tire band-like ingredient W, or the back end section Wz. By carrying

out inversion actuation of said supply contest ** YA 3 in this condition at a low speed, the configuration of the point Wx of the tire band-like ingredient W or the back end section Wz is reformable by the side face and the ****** member 22 of a guide plate 20.
[0018] After raising an elevate bar 14 again in the phase which correction of the point Wx of the above tire band-like ingredients W by which standard size cutting was carried out, or the back end section Wz ended, Supply contest ** YA 3 is rotated normally. A steel band belt to the front (the direction of an arrow head of drawing 7) Delivery, The tire band-like ingredient W can be supplied on the tire shaping drum 1 in the condition of having made it synchronizing with the tire shaping drum 1, and the splice with an always high precision as shown in drawing 10 can be performed by carrying out the splice of the terminal section of the tire band-like ingredient W.
[0019] As mentioned above, the junction condition of the always stabilized high degree of accuracy can be acquired by measuring the junction condition of the terminal section of the tire component W previously twisted around the tire shaping drum 1 by the displacement sensor 7, and performing amendment control of the joint of the tire component W supplied from next time based on this measurement data.
[0020]
[Effect of the Invention] This invention twists around the front face of a tire shaping drum the band-like ingredient beforehand cut as mentioned above corresponding to the circumference of a tire shaping drum. The junction condition of the crosswise center section near the ends of the cross direction of a joint where the head of this twisted band-like ingredient was cut at the fixed include angle to the longitudinal direction It measures by the displacement sensor installed in a fixed distance possible [positioning] to the front face of a tire shaping drum. When this measured value differs from the desired value of the junction condition of said joint, it is based on the data near the ends of the joint cross direction measured by said displacement sensor. Next, while performing location amendment of the correction guide equipment which amends near the ends of the joint cross direction in the point and the back end section of a band-like ingredient which are supplied Since it twists at the time of twisting around the front face of the tire shaping drum of a band-like ingredient based on the data of the joint center section measured by said displacement sensor and amendment control of the target die length is carried out It is effective in the ability to stabilize the joint precision of a band-like ingredient, without being able to acquire the junction condition of the high degree of accuracy stabilized without having repeated delicate adjustment and performing it, and being influenced of the terminal section precision of a band-like ingredient, and facility precision.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the outline front view of the joint precision measuring device of the tire component which carried out this invention.
[Drawing 2] It is the explanatory view showing the condition of having stuck the tire configuration member to a tire shaping drum.
[Drawing 3] The point and the back end section in the junction situation of the terminal section of a tire component are the explanatory view showing the opening splice condition currently opened by the width of face of homogeneity.
[Drawing 4] The point and the back end section in the junction situation of the terminal section of a tire component are the explanatory view showing the lap splice condition of having lapped by the width of face of homogeneity.
[Drawing 5] It is the explanatory view showing the condition that the right-hand side in the junction situation of the terminal section of a tire component carries out a lap, and left-hand side opens.
[Drawing 6] It is the explanatory view showing the condition that the right-hand side in the junction situation of the terminal section of a tire component opens, and left-hand side is carrying out the lap.
[Drawing 7] It is the top view of the head side correction guide equipment of a tire component.
[Drawing 8] It is the front view of the head side correction guide equipment of a tire component.
[Drawing 9] It is the side elevation of the head side correction guide equipment of a tire component.
[Drawing 10] It is the explanatory view showing the vat splice condition in the junction situation of the terminal section of a tire component.
[Description of Notations]
1 Tire Shaping Drum 2 Tire Band-like Ingredient
4 Head Side Correction Guide Equipment 6 Back End Side Correction Guide Equipment
7 Displacement Sensor W Tire Band-like Ingredient
Wx Point of a tire band-like ingredient Wz The back end section of a tire band-like ingredient
Wa Joint of a tire band-like ingredient

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] The band-like ingredient beforehand cut corresponding to the circumference of a tire shaping drum is twisted around the front face of a tire shaping drum. The junction condition of the crosswise center section near the ends of the cross direction of a joint where the head of this twisted band-like ingredient was cut at the fixed include angle to the longitudinal direction It measures by the displacement sensor installed in a fixed distance possible [positioning] to the front face of a tire shaping drum. When this measured value differs from the desired value of the junction condition of said joint, it is based on the data near the ends of the joint cross direction measured by said displacement sensor. Next, while performing location amendment of the correction guide equipment which amends near the ends of the joint cross direction in the point and the back end section of a band-like ingredient which are supplied The automatic supply attachment approach of the band-like ingredient characterized by twisting at the time of twisting around the front face of the tire shaping drum of a band-like ingredient based on the data of the joint center section measured by said displacement sensor, and carrying out amendment control of the target die length.

[Translation done.]